What is claimed:

1. A method for communicating information over a WDM fiber optical ring network architecture in a metro access arena using one or more wavelengths, which can be shared by a plurality of user terminals, each user terminal coupled to an end station comprising the steps of:

sending at least one downstream data packet;

sending at least one optical chalkboard packet consisting of a recognizable pattern; and

sending a control signal.

2. The method according to claim 1, further comprising the steps of:

reading, by the end station, data packets addressed to said end station;

passing packets not addressed to said end station through semiconductor optical amplifiers (SOAs); and

writing data onto said optical chalkboards when permitted to do so by said control signals.

3. A method for communicating over a WDM fiber optical ring network architecture in a metro access arena by sending WDM signals by a network node along a WDM fiber optical feeder ring to access nodes implemented with optical add-drop multiplexers (OADMs).

4. A method for communicating over a WDM fiber optical ring network architecture in a metro access arena by sending WDM signals by a network node along a WDM fiber optical feeder ring to access nodes implemented with optical add-drop multiplexers (OADMs), and further wherein said OADMs are waveguide grating routers (WGRs).

5. The method according to claim 3, further comprising the steps of:

light entering an input port of one of said OADM from said WDM fiber optical feeder ring; and

demultiplexing said light according to said light's wavelength.

6. The method according to claim 5, wherein each WGR has a routing scheme and further, after exiting said WGR's distribution side port, if said light of said wavelength re-enters an adjacent distribution side port, said light of said wavelength will emerge on a port adjacent to said WDM fiber optical feeder ring.

7. The method according to claim 2, wherein the reading step further comprises the steps of:

tapping a portion of light for a receiver;

decoding, by said receiver, downstream packets; and

passing a remaining portion of light to a wavelength-independent and polarization independent modulator.

8. The method according to claim 2, wherein the reading step further comprises the steps of:

tapping a portion of light for a receiver;

decoding, by said receiver, downstream packets; and

passing a remaining portion of light to a polarization independent modulator.

9. The method according to claim 2, wherein the reading step further comprises the steps of:

tapping a portion of light for a receiver;

decoding, by said receiver, downstream packets; and

passing a remaining portion of light to a wavelength-independent modulator.

10. The method according to claim 2, wherein said writing step further comprises the steps of:

determining when said control signals permit said writing; and

writing data by modulating said optical chalkboard.

11. The method according to claim 2, further comprising the steps of:

exiting said end station of light carrying data packets;

re-entering an access node by light carrying data packets via a WDM fiber optical distribution ring; and

continuing onto a WDM fiber optical feeder ring to a next node.

12. The method according to claim 11, wherein said next node is an access node.

13. The method according to claim 11, wherein said next node is a network node.

14. The method according to claim 10, wherein said determining step is accomplished using a Media Access Control (MAC) protocol.

15. The method according to claim 2, further comprising the steps of:

optically amplifying downstream data packets and any upstream data created by said writing step;

pre-equalizing any upstream data created by said writing step; and

modulating any upstream data created by said writing step.

16. The method according to claim 14, wherein a FDDI standard protocol is modified and used as the MAC protocol.

17. The method according to claim 14, wherein an ADAPT standard protocol is modified and used as the MAC protocol.

18. The method according to claim 16, wherein said fiber optical feeder ring is unidirectional, and further wherein said data packets transmitted through said next node are received by said next node and then forwarded when said next node gets a token, and further wherein said next node is a network node.

19. The method according to claim 16, wherein said fiber optical feeder ring is bi-directional, and further wherein a source transmits said data packets to a destination on one of a clockwise and a counter-clockwise fiber.

20. The method according to claim 19, wherein a choice between transmitting on one of the clockwise and the counter-clockwise fiber is made such that the data packets reach said destination before reaching said next node, further wherein said next node is a network node.

21. The method according to claim 17, wherein access nodes request bandwidth from said next node through a dedicated channel, and said next node grants bandwidth to access nodes according to a specified scheduling algorithm, and further wherein said next node is a network node.